

CLAIMS

What is claimed is:

- 1 1. A trigger generator for supplying a trigger signal to a medical device, the trigger  
2 generator comprising:  
3 a respiratory signal device associated with the subject that generates a respiratory  
4 signal representing the flow of gas into and out of the subject's lungs during the subject's  
5 breathing cycle; and  
6 a trigger generator that integrates the respiratory signal and generates a trigger signal  
7 when the integrated respiratory signal has a value representing a selected point in the subject's  
8 breathing cycle.
- 1 2. The trigger generator of claim 1, wherein the trigger generator comprises:  
2 an integrator that integrates the respiratory signal and generates a corresponding  
3 integrated respiratory signal; and  
4 a trigger level detector that compares the integrated respiratory signal with a trigger  
5 level and generates the trigger signal when the integrated respiratory signal equals the trigger  
6 level.
- 1 3. The trigger generator of claim 2, wherein the trigger level detector further comprises:  
2 a trigger level source for generating the trigger level representing  
3 the selected point in the subject's breathing cycle.
- 1 4. A method for triggering operation of a medical system at a selected point in a subject's  
2 breathing cycle, the method comprising the steps of:  
3 receiving a respiratory signal representing the flow of gas into and out of the subject's  
4 lungs during the subject's breathing cycle;  
5 integrating the respiratory signal to create an integrated respiratory signal; and

6 triggering the medical device when the integrated respiratory signal has a value  
7 corresponding to a selected point in the subject's breathing cycle.

1 5. The method of claim 4, wherein the steps of triggering the medical device comprises  
2 the steps of:

3 receiving the integrated respiratory signal;  
4 receiving a trigger level representing a value corresponding to selected point in the  
5 subject's breathing cycle as described by an integrated signal;  
6 comparing the integrated respiratory signal and the trigger level; and  
7 generating the trigger signal when the integrated respiratory signal corresponds to the  
8 trigger value.

1 6. The method of claim 5, wherein the step of comparing the integrated respiratory  
2 signal and the trigger level signal comprises the step of setting a value to be represented by  
3 the trigger value.

1 7. A trigger generator for supplying a triggering to a medical device, the trigger  
2 generator comprising:  
3 respiratory signal means associated with the subject for generating a respiratory signal  
4 representing the flow of gas into and out of the subject's lungs during the subject's breathing  
5 cycle; and  
6 trigger generator means for integrating the respiratory signal and generating a trigger  
7 signal when the integrated respiratory signal has a value representing a selected point in the  
8 subject's breathing cycle.

1 8. A medical data acquisition system comprising:  
2 a medical data system that acquires a set of data from a subject based on a trigger  
3 signal;

4 a respiratory signal device associated with the subject that generates a respiratory  
5 signal representing the flow of gas into and out of the subject's lungs during the subject's  
6 breathing cycle; and

7 a trigger generator that integrates the respiratory signal and generates the trigger  
8 signal when the integrated respiratory signal has a value representing a selected point in the  
9 subject's breathing cycle.

1 9. The medical data acquisition system, as set forth in claim 8, wherein the value  
2 representing a selected point in the subject's breathing cycle is selected to correspond to a  
3 point in the cycle where the motion of the lungs is at a minimum.

1 10. The medical data acquisition system, as set forth in claim 8, wherein the medical data  
2 system is an ultrasound system.

1 11. The medical data acquisition system, as set forth in claim 8, wherein the medical data  
2 system is a tomographic system.

1 12. The medical data acquisition system, as set forth in claim 8, wherein the medical data  
2 system is a MRI system.

1 13. The medical data acquisition system, as set forth in claim 8, wherein the respiratory  
2 signal device outputs a digital value and the trigger generator comprises a processor  
3 configured to integrate the respiratory signal and cause the output of the trigger signal.

1 14. A trigger generator for supplying a trigger signal to a medical device based on a  
2 respiratory signal representing the flow of gas into and out of the subject's lungs during the  
3 subject's breathing cycle, the trigger generator comprising:

4 an integrator that integrates the respiratory signal and generates a corresponding  
5 integrated respiratory signal;

6 a trigger level source that outputs a trigger level representing the selected point in the  
7 subject's breathing cycle; and

8 a trigger level detector that compares the integrated respiratory signal and the trigger  
9 level and generates the trigger signal when the integrated respiratory signal enters into a  
10 predetermined relationship with the trigger level.

1 15. A trigger generator for supplying a trigger signal to a medical device, the trigger  
2 generator comprising:

3 a respiratory signal device associated with the subject that generates a respiratory  
4 signal representing the flow of gas into and out of the subject's lungs during the subject's  
5 breathing cycle; and

6 a trigger generator that calculates a differential of the respiratory signal and generates  
7 a trigger signal when the differential has a value representing a selected point in the subject's  
8 breathing cycle.